UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/816,385	04/01/2004	Feng-Wen Sun	PD-203051	9374

7590   03/31/2009

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EXAMINER
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ART UNIT	PAPER NUMBER
2416	

MAIL DATE	DELIVERY MODE
03/31/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 December 2008*.
2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21,50 and 51* is/are pending in the application.
    4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *1-21,50 and 51* is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☒ The drawing(s) filed on *04/01/2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a)☐ All   b)☐ Some * c)☐ None of:
      1.☐ Certified copies of the priority documents have been received.
      2.☐ Certified copies of the priority documents have been received in Application No. _____.
      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5)☐ Notice of Informal Patent Application
6)☐ Other: _____ .

DETAILED ACTION

Response to Arguments

1.   Applicants' arguments filed December 19, 2008 have been fully considered but they are not persuasive because the previously provided references perfectly disclose the claimed invention. The finality of this office action is deemed proper.

The Applicants' argument on page 8 to 10 of the REMARKS is not persuasive, and thus the claims are not patentable in view of the cited references and the following explanation below.

Basically, the Applicants' argument is that Christodoloulides doesn't disclose duplicating and demultiplexing the data into a first and second data stream.

Well, the Examiner respectfully disagrees with the Applicants' above assertion. The claim limitation doesn't say that the first and second data streams are exactly the same. What it says is that the output data is divided (demultiplexed) into two streams. In fact, the Examiner wonders why the Applicants use the word "duplicating" while the phrase that follows the "duplicating" simply indicates dividing or splitting or demultiplexing the output data into two data streams. The Examiner couldn't even be able to read from the limitation that the two streams are the same. That was the main reason why the Examiner in the previous office action interpreted the word "duplicating" as to mean the two streams are equal in length. If the output data is divided into the first and second data streams, then how come the second data stream is a duplication of the first data stream? Therefore, the Examiner doesn't agree with the Applicants' current argument. In short, the claim doesn't specifically indicate the same way the Applicants are currently arguing. In fact, the Applicants don't even give weight to the word "duplicating" in

the apparatus (claim 15), let alone mentioned. Note also that copying a data stream and

transmitting the original data and its copy or inverted version of it is not something novel.

Therefore, the above, Applicants' argument is not persuasive and the claim invention is

not patentable in view of the references set forth in the previous office action and the Examiner's

response to the argument.

Claim Rejections - 35 USC § 103

2.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

3.   The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459

(1966), that are applied for establishing a background for determining obviousness under 35

U.S.C. 103(a) are summarized as follows:

1.   Determining the scope and contents of the prior art.
2.   Ascertaining the differences between the prior art and the claims at issue.
3.   Resolving the level of ordinary skill in the pertinent art.
4.   Considering objective evidence present in the application indicating obviousness
        or nonobviousness.

4.   Claims 1, 4, 9, 11-12, 15 and 50-51 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Christodoulides et al. (US 6.665,361 B1) in view of Raleigh et al. (US

6,158,041), and further in view of Kuznicki (US 5,282,205).

Regarding claims 1 and 4, Christodoulides discloses a method for supporting frame

synchronization in a digital communication system (col. 4, lines 16-19), the method comprising

the steps of: mapping a codeword specifying framing information of a frame according to a

signal constellation to output a data stream (Fig. 5; col. 5, lines 43-48, 56-58); duplicating and

demultiplexing the data stream into a first data stream and a second data stream (col. 5, line 66-

col. 6, line 6); and outputting a physical layer signaling header corresponding to the frame based

on the multiplexed data streams (col. 1, lines 61-67; col. 4, lines 1-6; col. 5, lines 51-52; col. 5,

line 66-col. 6, line 10).

Christodoulides doesn't disclose codeword, modifying the first data stream according to a

predetermined operation; multiplexing the modified first data stream with the second data

stream; and outputting a physical layer signaling header corresponding to the frame based on the

multiplexed data streams.

Raleigh teaches modifying the first data stream according to a predetermined operation

(Fig. 2; col. 4, lines 61-64, illustrates the first data stream is modified by multiplying the value i

by the multiplier 222); multiplexing the modified first data stream with the second data stream

(Fig. 2; col. 4, line 65-col. 5, line 1; explains the first data stream modified by multiplier 222 and

the second data stream are combined or multiplexed by the summer 224 and the combined output

is interleaved by interleaver).

Raleigh doesn't teach codeword for frame information.

Kuznicki teaches a codeword specifying frame information (col. 6, lines 24-37, 52-56).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to incorporate codeword to specify frame information, modifying first data

stream by multiplying a constant value and combine the modified first data stream with the

second data stream outputted from the constellation map element as taught by Kuznicki and

Raleigh into the satellite communication of Christodoulides in order to be able to reconfigure the

amount of information which can be transmitted on the channel within the available transmission

frames that maximizes message throughput on the channel, and the decoder would not be

overwhelmed with successive errors, thus optimize performance and avoid degrading the system.

Regarding claim 9, Chrisodoulides discloses scrambling the multiplexed data streams

(col. 4, lines 3-6).

Regarding claims 11, 12 and 15, the same rejections to claims 1 and 4 are applicable

hereto. The claims are just mere reformulation of claim 1 and 4 in order to define the

corresponding computer-readable medium and apparatus.

Regarding claims 50 and 51, Chrisodoulides discloses the data stream includes a unique

word to assist with synchronization (col. 4, lines 16-19).

5.   Claims 2, 10, 13 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Christodoulides in view of Raleigh and Kuznicki, as applied to claims 1 and 12 above, further in

view of Paulter et al. (US 6,859,503 B2).

The satellite communication of Christodoulides discloses the signal constellation depends

on or according to16QAM modulation scheme. However, Christodoulides doesn't disclose the

signal constellation is independent of a modulation scheme of the frame (col. 4, lines 12-19; col.

5, lines 17-21, 46-48; col. 9, lines 48-55).

Pautler teaches the signal constellation is independent of a modulation scheme of the

frame (col. 13, lines 63-67, explains the constellation can be any of the modulation schemes

BPSK, QPSK, M-PSK, and M-QUAM).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to incorporate to incorporate any of the above specified modulation scheme

(i.e. the signal constellation independent of the modulation schemes) as taught by Pautler into the

modified satellite communication of Christodoulites in order to transmit and receive data

streams in different rates, thus efficiently control the transmission.

6.   Claims 3 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Christodoulides in view of Raleigh and Kuznicki, as applied to claims 1 and 12 above, further in

view of Mpgre et al. (US 2004/0047433 A1).

        Christodoulides discloses a frame format for satellite communication (abstract).

Christodoulides doesn't disclose the frame is a Low Density Parity Check (LDPC) coded frame.

        Mogre teaches the frame is a Low Density Parity Check (LDPC) coded frame (paragraph

[0018]).

        Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to use LDPC frame format of Mogre in the modified satellite communiation

of Christodoulides to efficiently transmit broadband service content using the LDPC that may

operate efficiently and effectively using preexisting bandwidth allocated, and avoid attenuation

problems when broadcast at preexisting transmission power level.

7.   Claims 5, 6 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Christodoulides in view of Raleigh and Kuznicki, and further in view of Gardner (US

5,627,499).

        Christodoulides discloses a method for supporting frame synchronization in a digital

communication system (col. 4, lines 16-19), the method comprising the steps of: mapping a

unique word specifying framing information of a frame according to a signal constellation to

output a data stream (Fig. 5; col. 5, lines 43-48, 56-58); duplicating and demultiplexing the data

stream into a first data stream and a second data stream (col. 5, line 66-col. 6, line 6); and

outputting a physical layer signaling header corresponding to the frame based on the multiplexed

data streams (col. 1, lines 61-67; col. 4, lines 1-6; col. 5, lines 51-52; col. 5, line 66-col. 6, line

10).

Christodoulides doesn't disclose codeword, modifying the first data stream according to a

predetermined operation; multiplexing the modified first data stream with the second data

stream; and outputting a physical layer signaling header corresponding to the frame based on the

multiplexed data streams.

Raleigh teaches modifying the first data stream according to a predetermined operation

(Fig. 2; col. 4, lines 61-64, illustrates the first data stream is modified by multiplying the value i

by the multiplier 222); multiplexing the modified first data stream with the second data stream

(Fig. 2; col. 4, line 65-col. 5, line 1; explains the first data stream modified by multiplier 222 and

the second data stream are combined or multiplexed by the summer 224 and the combined output

is interleaved by interleaver).

Raleigh doesn't teach codeword, the sign of the multiplier represents a portion of the

framing information, bits of the first data stream are interleaved with respective additional bits,

the additional bits being phase rotated relative to the bits of the first data stream during

modulation.

Kuznicki teaches mapping a codeword specifying frame information (col. 6, lines 24-37,

52-56).

Gardner teaches the sign of the multiplier represents a portion of the framing information,

bits of the first data stream are interleaved with respective additional bits, the additional bits

being phase rotated relative to the bits of the first data stream during modulation (Figs. 2 and 3; col. 4, lines 31-59, illustrates "...the effect of adding multiple 90 degrees to the 8-bit digital representation of the in-phase...bit in the shift register is a logical one, the counter increments the phase by 90 degrees. Alternatively, when the oldest bit in the shift register is a logical zero, the counter decrements the phase by 90 degrees, and rotating the bits by multiples of 90 degrees).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use modifying first data stream by multiplying a constant value, combine the modified first data stream with the second data stream outputted from the constellation map element, mapping codeword for frame information the sign representing frame information and rotating the bits by multiples of 90 degrees as taught by Raleigh, Kuznick and Gardner into the satellite communication of Christodoulides in order to be able to reconfigure the amount of information which can be transmitted on the channel within the available transmission frames that maximizes message throughput on the channel, to reduce size and cost of a circuit, and the decoder would not be overwhelmed with successive errors, thus optimize performance and avoid degrading the system.

8.   Claims 7 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Christodoulides in view of Raleigh and Kuznicki, as applied to claims 1 and 12 above, further in view of Kim et al. (US 6,851,085 B2).

Christodoulides discloses generating the codeword or unique word according to turbo or convolutional code. However, Christodoulides doesn't disclose generating the codeword according to a first order Reed-Muller code.

Kim teaches generating the codeword according to a first order Reed-Muller code (col. 2, lines 24-36).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the first order Reed-Muller code to generate codeword as taught by Kim in to the satellite communication of Christodoulides so that a smaller and simplified hardware would be used to generate the codeword at different coding rates, that is, for the input of different information bits reduces the number of required encoders, simplifies the encoder and decoder structure, and as a consequence, decreases their size.

9.   Claims 8 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Christodoulides in view of Raleigh and Kuznicki, as applied to claims 1 and 12 above, further in view of Love et al. (US 7,158,482 B2).

The modified satellite communication of Crhrisodoulides discloses the framing information. However, the modified satellite communication of Chrisodoulides doesn't explicitly the framing information specifies a modulation scheme, and a coding scheme.

Love teaches the framing information specifies a modulation scheme, and a coding scheme (Fig. 4; col. 5, lines 55-60).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate framing information or field indicating modulation and coding schemes as taught by Love into the modified satellite communication of Chrisodoulides in order to improve data throughput of the system, and properly demodulate and decode the data streams.

Conclusion

10.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing

date of this final action.

11.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Kibrom T. Hailu whose telephone number is (571)270-1209. The

examiner can normally be reached on Monday-Thursday 8:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Ricky Q. Ngo can be reached on (571)272-3139. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kibrom T Hailu/

Examiner, Art Unit 2416

/Ricky Ngo/

Supervisory Patent Examiner, Art Unit 2416